



DEPARTMENT OF AGRICULTURE  
BRANCH OF THE DAIRY AND COLD STORAGE COMMISSIONER  
OTTAWA, CANADA.

# NOTES FOR FACTORY CHEESEMAKERS

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Bulletin No. 29

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Dairy and Cold Storage Series

Published by direction of the Hon. SYDNEY A. FISHER, Minister of Agriculture, Ottawa, Ont.

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LETTER OF TRANSMITTAL.

OTTAWA, April 10, 1911.

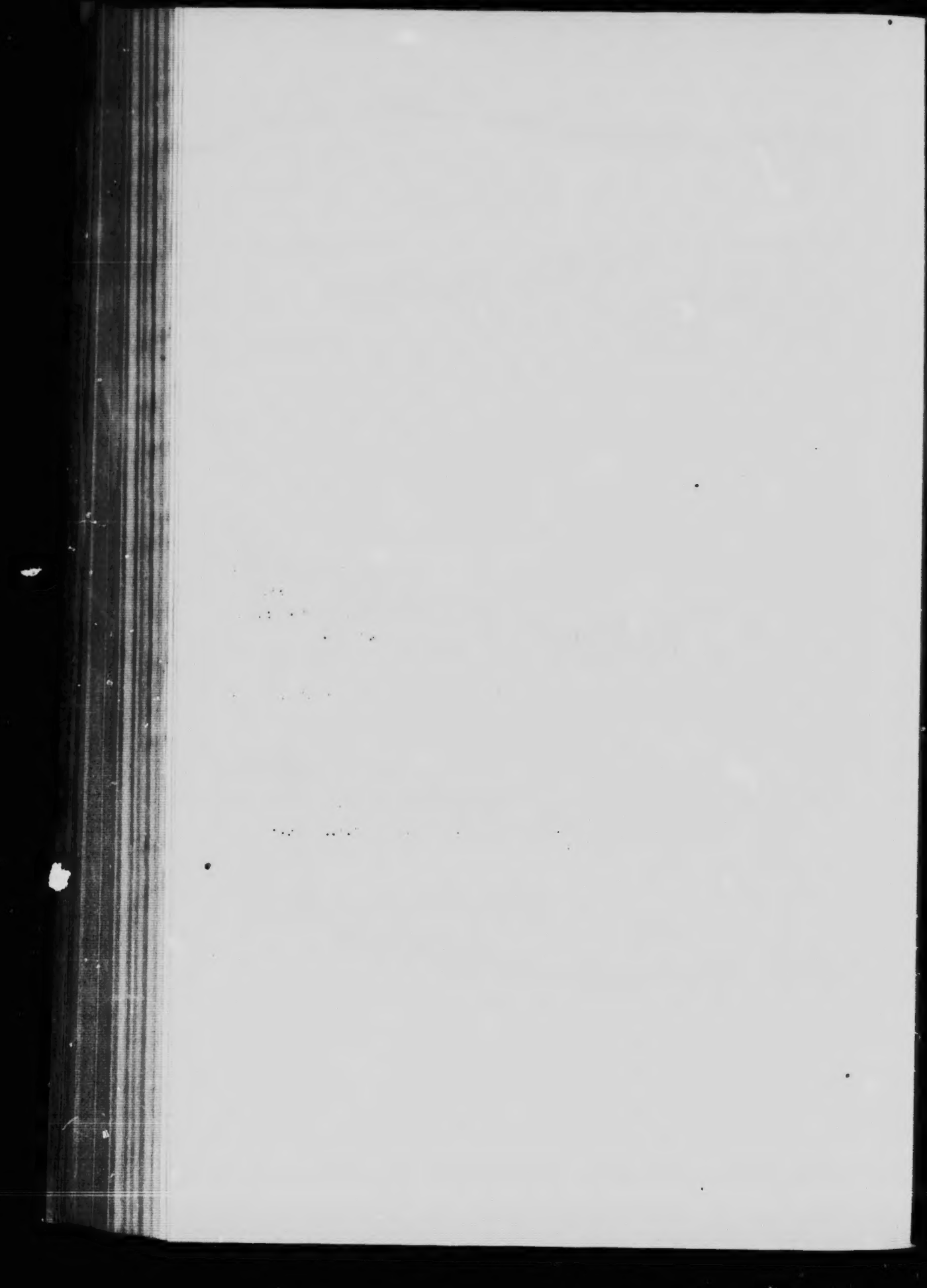
To the Honourable  
The Minister of Agriculture.

SIR,—I beg to submit the manuscript for a bulletin entitled 'Notes for Factory Cheesemakers' which has been prepared in this office. It consists chiefly of a revision of bulletin No. 9 of a former series, by the writer, with new notes based on the experiments in the handling of milk for cheesemaking, conducted by Mr. Geo. H. Barr, Chief of the Dairy Division, in 1908 and 1909.

I have the honour to recommend that it be printed for general distribution as bulletin No. 29 of the Dairy and Cold Storage series.

I have the honour to be, Sir,  
Your obedient servant,

J. A. RUDDICK,  
*Dairy and Cold Storage Commissioner.*



## NOTES FOR FACTORY CHEESEMAKERS.

1. You cannot make strictly fine cheese from milk which is overripe or tainted.
2. A progressive cheesemaker will study the causes of tainted and overripe milk and assist the patrons to remove them.
3. Milk may become tainted from,—
  - (a) Absorbing bad odours,
  - (b) The dust and dirt that may get into the milk during and after milking,
  - (c) Rusty and unclean utensils,
  - (d) The cows eating unsuitable feed,
  - (e) The cows drinking impure water.
4. Milk is injured rather than improved by aeration.
5. Insist on the patrons cooling the milk as quickly as possible during or after milking.
6. The easiest and most effective method of cooling milk for cheesemaking is to place the milk can in a tank of cold water or water and ice and strain each cow's milk into it as soon as milked.
7. Put the covers on the cans as soon as possible after milking is finished. This will prevent tough or leathery cream and keep the dust and dirt from blowing into the milk.
8. In warm weather the evening's milk should be cooled to 60 or 65 degrees if delivered the following morning.
9. Milk to be kept longer than overnight should be cooled to 50 degrees or under.
10. It is not necessary to cool the morning's milk if delivered in a separate can.
11. Milk that makes gassy curds is usually dirty. Clean milk and clean utensils will never produce gassy curds.
12. Generally speaking, a patron who delivers tainted or gassy milk to a cheese factory causes a more serious loss to his fellow patrons than one who skims or waters his milk. This fact should be impressed on the minds of the patrons.
13. Attend personally to the taking in of the milk as far as possible.
14. Keep your weighing stand and everything thereon, including your clothes and person, thoroughly clean. You have no right to require the patrons to furnish clean milk unless you set a good example.
15. Make fermentation tests of each patron's milk as frequently as possible. By this means you will often locate taints which are not discernible when the milk is being received.
16. The rennet should be used in sufficient quantity to coagulate the milk, fit for cutting, in not more than 30 minutes, at a temperature of 86 degrees Fahr.<sup>1</sup>
17. The milk should have such a degree of ripeness, or acidity, when the rennet is added, that the whey will be removed in two and a half to three hours from the time the rennet is added.
18. When cutting the curd, always aim to make the cubes of uniform size, and follow any course that will secure such a result.

<sup>1</sup> The instructors in the province of Quebec recommend 45 minutes for coagulation.

19. A curd that is allowed to get too firm cannot be so well cut as one that is 'just about.'

20. If the cubes of curd are uneven in size, there will be different kinds of curd in the vat when the whey is removed, because the smaller particles harden first and do not show acid as quickly as the larger and softer ones do.

21. Stir very gently at first after cutting. Many cheesemakers cause more waste at this stage than their wages amount to.

22. The curd should be firm, elastic and well 'cooked' before there is any appreciable development of acidity.

23. Failure to have the curd firm before the whey is removed is apt to result in 'acid' or tender-bodied cheese.

24. If difficulty is experienced in getting the curd firm at the proper stage, run off a considerable portion of the whey some time before the curd is ready to dip without tipping the vat, and stir curd vigorously.<sup>2</sup>

25. If difficulty is still experienced in getting the curd firm, remove all the whey with a little less than a normal acid, or add about half a dozen pails of pure water (at cooking temperature) when the whey has been removed and keep the curd stirred until it is well firmed.<sup>2</sup>

26. It is generally advisable to raise the 'cooking' temperature several degrees as the season advances, and the milk becomes richer in fat and casein. It should never be raised higher than is necessary at any time of the year.

27. When the whey is removed, the curd should be stirred on racks placed on the bottom of the vat at this stage, or in special 'sinks' having rack bottoms.

28. The cloths used over these racks must be kept clean. Bad flavours in cheese are often caused by filthy rack cloths.

29. It is seldom necessary to have more than  $\frac{1}{4}$  of an inch of acid by the hot iron test, nor more than 0.2 per cent by acidimeter test when the whey is removed.

30. It requires good judgment to determine the amount of stirring the curd should receive before being allowed to 'pack.' Cheesemakers should study this point carefully, because it has an important effect on the texture and body of the finished cheese.

31. The curd should be protected with a cover while maturing.

32. If a cloth is used, it should not rest on the curd.

33. If too much moisture has been allowed to remain in the curd, cut into narrow strips, turn often and do not pile too quickly.

34. The curd should be cut or broken into convenient sized pieces and turned about every twenty minutes, or often enough to keep the whey from collecting on the curd.

35. If the curd shows signs of greasiness, the pieces should not be piled one on top of the other.

36. A 'greasy' curd may with advantage be salted earlier and allowed to mature afterwards, or when well matured, rinse with pure water at about 90 degrees temperature and salt immediately after.

37. The application of the salt retards but does not stop the changes that are taking place in the curd.

<sup>2</sup> The Quebec instructors advise raising the temperature in such cases.



38. When filling the hoops, pack the curd well in the centre, so that when pressure is applied the curd will close up in the centre first and the air and whey will have a chance to escape.

39. Apply pressure gradually. 'A little and often' is a good rule for the first hour.

40. Many cheese are open and loose because not well pressed.

41. A sweet, immature curd will not make a close cheese under any amount of pressure, but no Cheddar cheese is ever solid and close, unless heavy pressure has been applied.

42. Salt gives a flavour to cheese, assists in expelling moisture and has considerable effect on the texture.

43. Salt varies greatly in weight owing to its quality of absorbing moisture, and giving it off again. It is, therefore, easier to secure uniform results if the salt is measured instead of weighed.

44. The cheese should be turned in the hoops in the morning and kept well pressed until about noon. Good results are obtained by pressing two days.

45. If seamless bandage is used, a half size smaller than the hoop (15-inch for a 15½-inch hoop, etc.) will give you a neater looking cheese.

46. The best temperature for curing cheese is certainly not over 60 degrees.

47. There is a marked difference in the flavour and texture of cheese cured between 56 and 58 degrees Fahr., as compared with others of the same batch cured even at 70 degrees. As the temperature is raised, the difference increases in favour of the lower temperature, especially in the matter of flavour.

48. There is as much as from one to two per cent less shrinkage if the cheese are cured at the lower temperature.

49. A cheese cured at 58 degrees begins to 'break down' about a week later than if cured at ordinary curing room temperatures, say 70 to 80 degrees.

50. As a cheesemaker, you should use all your influence towards securing better sanitary conditions in and around cheese factories.

51. Some attempt should be made to keep flies out of the factory. It is disgusting to see the swarms of them in some places.

52. Flies are attracted to all kinds of filth with its putrefactive germs. Particles of filth containing germs cling to their legs and bodies, and when they get into milk or cream, they are a sure source of infection.

53. A cement concrete floor is the only kind that will ensure perfect drainage for the making room. It will also help to keep the curing room cool in hot weather, and warm in cold weather.

54. Dirty whey tanks are a source of contamination at many cheese factories where the whey is returned in the milk cans.

55. Make it your business to see that the whey tank at your factory is kept clean; otherwise, it is useless to expect your cheese to have a fine flavour.

56. Heating the whey to 155 degrees will improve its feeding value and also eliminate many of the objectionable flavours found in cheese.

57. Send to the Dairy and Cold Storage Commissioner, Ottawa, for a sufficient number of copies of bulletins Nos. 20 and 22 to furnish one to each patron. There is no charge for the bulletins.



# LIST OF PUBLICATIONS

## OF THE

### DAIRY AND COLD STORAGE COMMISSIONER'S SERIES.

#### REPORTS.

|      |                                                                  |
|------|------------------------------------------------------------------|
| 1906 | Report of the Dairy Commissioner, January, 1905, to March, 1906. |
| 1907 | Report of the Dairy and Cold Storage Commissioner, 1907.         |
| 1908 | Report of the Dairy and Cold Storage Commissioner, 1908.         |
| 1909 | Report of the Dairy and Cold Storage Commissioner, 1909.         |
| 1910 | Report of the Dairy and Cold Storage Commissioner, 1910.         |

#### BULLETINS.

| Date Issued. | No. | Title.                                                                                                                       |
|--------------|-----|------------------------------------------------------------------------------------------------------------------------------|
| 1905         | 1   | List of Some British Importers of Farm Products.                                                                             |
| 1905         | *2  | Care of Milk for Cheese Factories. { Superseded by Bulletin                                                                  |
| 1905         | *3  | Care of Milk for Creameries. { No. 22.                                                                                       |
| 1905         | *4  | Some Phases of Dairying in Denmark.                                                                                          |
| 1905         | 5   | Improvement of Dairy Herds.                                                                                                  |
| 1905         | 6   | Chemical Investigations Relating to Dairying in 1904.                                                                        |
| 1905         | 7   | List of Exporters of Some Canadian Products.                                                                                 |
| 1906         | 8   | Some of the Factors that Control the Water Content of Butter.                                                                |
| 1906         | *9  | Instructions for Testing Individual Cows, etc.                                                                               |
| 1906         | 10  | Creamery Cold Storage.                                                                                                       |
| 1906         | 11  | The Inspection and Sale Act, Part IX, as amended in 1907-8.<br>(The Fruit Marks Act and Fruit Packages.)<br>Revised Edition. |
| 1906         | 12  | Cow Testing Associations, with Some Notes on the Sampling and<br>Testing of Milk.                                            |
| 1907         | 13  | Sweet-Cream Butter.                                                                                                          |
| 1907         | 14  | Apparatus for the Determination of Fat and Water in Butter.                                                                  |
| 1907         | †15 | Gathered Cream for Buttermaking.                                                                                             |
| 1907         | *16 | Subsidies for Cold Storage Warehouses. (Superseded by Bulletin<br>No. 23.)                                                   |
| 1907         | 17  | Buttermaking on the Farm.                                                                                                    |
| 1907         | *18 | Co-operation in the Marketing of Apples.                                                                                     |
| 1907         | 19  | The Packing of Apples in Barrels and Boxes.                                                                                  |
| 1907         | †20 | The Use of Ice on the Farm.                                                                                                  |
| 1907         | *21 | Report of the Cow Testing Associations.                                                                                      |
| 1909         | †22 | The Cooling of Milk for Cheesemaking.                                                                                        |
| 1910         | 23  | Cold Storage and the Cold Storage Act.                                                                                       |
| 1910         | 24  | Report on Some Trial Shipments of Cold Storage Apples.                                                                       |
| 1910         | 25  | Coulommier Cheese, Some Notes on its Manufacture.                                                                            |
| 1910         | 26  | Dairy Legislation.                                                                                                           |
| 1911         | 27  | Trial Shipment of Peaches, 1910.                                                                                             |
| 1911         | 28  | The Dairying Industry, an Historical and Descriptive Account.                                                                |

#### CIRCULARS.

|      |   |                                                     |
|------|---|-----------------------------------------------------|
| 1910 | 1 | Iced Cheese Cars, 1910.                             |
| 1911 | 2 | The Milk Test Act.                                  |
| 1911 | 3 | The Outlook for Canadian Tomatoes in Great Britain. |

#### SPECIAL PUBLICATIONS.

|      |                                                                           |
|------|---------------------------------------------------------------------------|
| 1907 | Map Showing the Location of Cheese Factories and Creameries<br>in Canada. |
|------|---------------------------------------------------------------------------|

Any of these publications will be sent free of charge on application to the Dairy and Cold Storage Commissioner, Ottawa, Ont.

\*Out of print.

†A sufficient number of bulletins 15, 20 and 22 will be sent to the manager of any cheese factory or creamery to supply one to each patron.